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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,511	05/02/2001	Yu-Hsi Wang	67,200-404	7868

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EXAMINER

KORNAKOV, MICHAIL

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/847,511	WANG ET AL.	
	Examiner	Art Unit	
	Michael Kornakov	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claim 8 has been cancelled by Amendment dated 02/20/2004.
2. Claims 10 and 11 have been amended to overcome 35 U.S.C. 112, second paragraph rejection, and the rejection is, therefore, withdrawn.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1, 5, 6 stand rejected under 35 U.S.C. 102(b) as being anticipated by Komatsuzaki (U.S. 4,417,945), as per reasons of record.

Komatsuzaki discloses apparatus for any liquid treatment of a wafer (abstract). The apparatus of Komatsuzaki comprises treatment vat (reads on tank body) with treatment solution, means for holding the wafer(s) in vertical position and means for reciprocally moving the wafers' holding means with wafer(s) being immersed into the treatment solution. The wafer holding means are moved **reciprocally** up and down by a mechanism with a cylinder and a piston (see Abstract, col.1, lines 6-12; col. 2, lines 15-37; col.3, lines 46-63; col.4, lines 60-65; col.5, lines 58-62; Fig.4 and 5).

With regard to the limitation of the instant claim 1, that the "...wafer is immersed in a stripper solution at a frequency of not more than 100 cycle/min", it is noted that such limitation is not relevant to the apparatus claims, because what defines the

patentability of apparatus, is its structural elements, but in no way the method by which it operates. In other words, apparatus claims must be structurally distinguishable from the prior art in terms of structure not function. In re Danley, 120 USPQ 528, 531 (CCPA 1959); Hewlett-Packard Co. V. Baush and Lomb, Inc., 15 USPQ2nd 1525, 1528 (Fed. Cir. 1990); Furthermore, since the structural limitations of the claimed apparatus are met by the disclosure of Komatsuzaki, the wafer holder of apparatus of Komatsuzaki is fully capable of being operable at a frequency of up to 100 cycle/min.

Therefore all structural elements of apparatus as per instant claims 1, 5 and 6 are met by Komatsuzaki, and are therefore anticipated by this reference.

5. Claims 1, 2 stand rejected under 35 U.S.C. 102(b) as being anticipated by Weber et al (U.S. 5,922,431), as per reasons of record.

Weber teaches device for treating substrates, such as semiconductor wafers. The device of Weber comprises fluid container (reads on "tank", as instantly claimed) into which liquid chemicals can be introduced (col. 5, lines 29-35), an overflow opening via which the fluid entering the container can flow out (col.8, lines 33-35), wafer receiving device (reads on "wafer holder", as instantly claimed) and means for lifting and lowering or reciprocating vertically the wafer receiving device (col.7, lines 49-53). The liquid media is contained within the fluid container during wafer processing (col.8, lines 17-35). Therefore, the device of Webber is fully capable of holding, immersing and reciprocating at least one wafer being in vertical position. Since the structural limitations of the claimed apparatus are met by the disclosure of Weber, as acknowledged by

Applicants in their response as of 02/20/2004, the wafer holder of apparatus of Weber is fully capable of being operable at a frequency of up to 100 cycle/min.

The device of Weber also comprises heating means for heating the fluid contained in said fluid container (col.6, lines 38-41). Therefore, the limitations of claims 1 and 2 are met by Weber.

6. Claims 2, 9 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Komatsuzaki in view of Erk et al. (U.S. 5,593,505), as per reasons of record.

With regard to claim 2, Komatsuzaki remains silent about the use of heating means for heating the treatment solution, as per claim 2. However, the heating of treatment solutions is widely utilized in the art in order to enhance cleaning efficiency.

Erk discloses method of cleaning semiconductor wafers and in order to enhance semiconductor cleaning process Erk utilizes reciprocal motion of wafers, which are placed in the bath. Erk also indicates that raising the bath temperature is beneficial for cleaning procedure (col.3, lines 28-29). Therefore the heating means are inherent in the teaching of Erk.

Because both Komatsuzaki and Erk are concerned with liquid treatment of semiconductor wafers and Erk indicates the benefits of raising the bath temperature, one skilled in the art, motivated by the disclosure of Erk, at time the invention was made, would have found it obvious to provide the heating means in order to obtain and maintain the desired temperature of treatment solution in the apparatus of Komatsuzaki.

With regard to the method for removing unwanted film layers, as per instant claims 9 and 15, Komatsuzaki discloses a method comprising the steps of providing a tank with a stripper solution, provides a wafer holder that holds a wafer in a vertical position, as instantly claimed, and the wafer holding means is moved reciprocally up and down by a mechanism with piston and cylinder (Abstract, col.1, lines 6-12; col. 2, lines 15-37; col.3, lines 46-63; col.4, lines 60-65; col.5, lines 58-62; Fig.4 and 5). After completion of liquid treatment in the treatment vat, the wafer is dump rinsed in the rinse vat 16 (col.5, lines 8-12).

The teaching of Komatsuzaki differs from the instant claims by not indicating a specific frequency value of up and down motion. In addition to other semiconductor cleaning means and techniques, in order to enhance semiconductor cleaning process Erk also utilizes reciprocal motion of wafers. Erk provides the range of reciprocating rates from 20 cycles/min to 240 cycles/min and states that the reciprocating rate affects the processing time (col.6, lines 28-31). Erk also discloses the preferable reciprocating rate of at least 60 cycles/min as one of his processing parameters.

Because the reciprocal motion of the substrate is an important element in treatment techniques of Komatsuzaki and Erk, and Erk teaches that the reciprocating rate affects the processing time and, therefore, the cleaning results, one skilled in the art at the time the invention was made, motivated by the teaching of Erk would have found it obvious to utilize the preferable reciprocating rate of Erk while optimizing the value of reciprocal frequency and cleaning the wafer in a timely manner in the teaching of Komatsuzaki with the reasonable expectation of success.

7. Claims 3 and 4 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (U.S. 5,992,431) in view of Applicants' admittance or separately over Komatsuzaki in view of Applicants admittance, as per reasons set forth in the previous office action on the merits.

In regard to claims 3 and 4, which are concerned with specific design of wafer holders, it is noticed here that the claimed wafer holders are typical holders, commonly and widely used in the art (paragraph, bridging pages 16 and 16 of the instant disclosure). Therefore, one skilled in the art would have found it obvious to utilize the conventional wafer holders in the apparatus of Weber or Komatsuzaki in order to provide economical and technologically compatible equipment for semiconductor wafer(s) treatment.

8. Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Weber in view of Cardani et al. (U.S. 5,003,999), as per reasons of record.

While teaching the use of heating means, the disclosure of Weber is silent about the utilization of **electrical** heating means. However, conventionally controlled electrical resistors as heating means for liquid processing baths are notoriously utilized in the art of wet processing of semiconductor wafers, as provided by Cardani (paragraph, bridging col.1 and 2).

Therefore, one skilled in the art, motivated by the teaching of Cordani, would have found it obvious to utilize the electrical heating means, as disclosed by Cordani, in

order to provide precise and convenient control of temperature of the treatment solution in the teaching of Weber.

9. Claims 10, 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Komatsuzaki (U.S. 4,417,945) in view of Erk et al. (U.S. 5,593,505) and in further view of Ward et al. (U.S. 5,988,186), per reasons set forth in the previous office action on the merits.

The combined teaching of Komatsuzaki and Erk does not specifically provide for the stripper solution that comprises DMSO and TMAH. However it indicates that the disclosed apparatus can be used for any liquid treatment of any plate like materials, thus motivating the skilled artisan to explore different treatment solutions in semiconductor processing.

Ward teaches an aqueous composition, comprising DMSO and TMAH (see example in paragraph, bridging col.6 and 7), which is useful for treatment wafer surfaces during the fabrication of integrated circuits (paragraph bridging col.4 and 5; col. 5, lines 3-31). The composition of Ward is non-corrosive, non-flammable and of low toxicity to the environment.

Because both the combined teaching of Komatsuzaki and Erk and Ward are concerned with liquid treatment of semiconductor wafers and Ward provides for the environmentally safe and non-toxic treatment composition, one skilled in the art, motivated by the teaching of Ward, would have found it obvious to utilize the treatment composition of Ward in order to provide non-corrosive and environmentally safe

treatment media and treat the wafers in combined teaching of Komatsuzaki and Erk with the reasonable expectation of success.

10. Claims 12, 13, 16, 17 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over combined teaching of Komatsuzaki and Erk, as discussed above and in view of Noguchi (U.S. 4,657,631), as per reasons of record.

The combined teaching of Komatsuzaki and Erk does not specifically indicates the step of stationary soaking the wafer in treatment solution for a definite amount of time.

Noguchi teaches removal of a solid layer of photosensitive material from the substrate surface by **stationary soaking** the substrate in a liquid, which is capable of dissolving the photosensitive solid layer followed by agitation of the substrate in order to accelerate the removal process.

Because both the combined teaching of Komatsuzaki and Erk and Noguchi are concerned with liquid treatment of substrates and Noguchi emphasizes acceleration of treatment by stationary soaking the substrate in a processing liquid, one skilled in the art motivated by the disclosure of Noguchi would have found it obvious to soak the substrate in the process of Komatsuzaki and Erk separately from its agitation in order to process the substrate in a timely manner.

In regard to soaking time, it is noted that this parameter is result effective, because the required dissolving or, alternatively, swelling of the removable layer depends on the characteristics of this particular layer, applied solution and on the

duration of dissolution or swelling step. However, discovery of optimum value of result effective variable in known process is ordinarily within the skill in the art and would have been obvious, consult *In re* Boesch and Slaney 205 USPQ 215 (CCPA 1980).

11. Claim 14 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Komatsuzaki (U.S. 4,417,945) in view of Erk et al. (U.S. 5,593,505) and in further view of Handbook of Semiconductor Wafer Cleaning Technology (hereinafter referred to as The Book).

The combined teaching of Komatsuzaki and Erk remains silent about spin drying of wafer(s) after processing. However, the drying of wafers after processing is notoriously used and recognized in the art of semiconductor technology as an extremely critical step, and the spin drying is the most widely utilized drying technique, as provided by the Book (page 24, paragraph 3.5).

Therefore, one skilled in the art, motivated by the teaching of the Book, would have found it obvious to spin dry wafer(s) in the teaching of Komatsuzaki and Erk, after their rinsing, in order to prevent re-deposition of unwanted elements onto the wafer's surfaces and provide for the proper storing.

12. Claim 18 stands rejected under 35 U.S.C. 103(a) as being unpatentable over combined teaching of Komatsuzaki, Erk and Noguchi (U.S. 4,657,631) and in further view of Ward et al. (U.S. 5,988,186).

The combined teaching of Komatsuzaki, Erk and Noguchi applied to independent claim 16 does not specifically provide for the stripper solution that comprises DMSO and TMAH. However it indicates that the disclosed apparatus can be used for **any liquid treatment** of any plate like materials, thus motivating the skilled artisan to explore different treatment solutions in semiconductor processing.

Ward teaches an aqueous composition, comprising DMSO and TMAH (see example in paragraph, bridging col.6 and 7), which is useful for treatment wafer surfaces during the fabrication of integrated circuits (paragraph bridging col.4 and 5; col. 5, lines 3-31). The composition of Ward is non-corrosive, non-flammable and of low toxicity to the environment.

Because both the generic teachings of Komatsuzaki Erk and Ward are concerned with liquid treatment of semiconductor wafers and Ward provides for the environmentally safe and non-toxic treatment composition, one skilled in the art, motivated by the teaching of Ward, would have found it obvious to utilize the treatment composition of Ward in order to provide non-corrosive and environmentally safe treatment media in the treatment of wafers of Komatsuzaki and Erk.

13. Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over combined teaching of Komatsuzaki, Erk, and Noguchi, as discussed above and in further view of Handbook of Semiconductor Wafer Cleaning Technology (The Book).

The combined teaching of Komatsuzaki, Erk and Noguchi remains silent

about spin drying of wafer(s) after processing. However, the drying of wafers after processing is notoriously used and recognized in the art of semiconductor technology as an extremely critical step, and the spin drying is the most widely utilized drying technique, as provided by the Book (page 24, paragraph 3.5).

Therefore, one skilled in the art, motivated by the Book, would have found it obvious to spin dry wafer(s) in the teaching of Komatsuzaki, Erk and Noguchi, after their rinsing, in order to prevent re-deposition of unwanted elements onto the wafer's surfaces and provide for the proper storing.

Response to Arguments

14. Applicant's arguments filed 02/20/2004 have been fully considered but they are not persuasive.

With regard to Komatsuzaki reference, Applicants argument resides in contention that Komatsuzaki does not teach "...means for reciprocally moving the wafer holder at a frequency of up to 100 cycle/min". In response to this it is noted that the structural limitations of the claimed apparatus per se are fully met by the disclosure of Komatsuzaki. The limitations of " reciprocally moving the wafer holderat a frequency of up to 100 cycle/min" is directed to the way the claimed apparatus operates. However, what defines the patentability of apparatus, is its structural elements, but in no way the method by which it operates. In other words, apparatus claims must be structurally distinguishable from the prior art in terms of structure not function. In re Danley, 120 USPQ 528, 531 (CCPA 1959); Hewlett-Packard Co. V.

Baush and Lomb, Inc., 15 USPQ2nd 1525, 1528 (Fed. Cir. 1990); Furthermore, since the structural limitations of the claimed apparatus are met by the disclosure of Komatsuzaki, the wafer holder of apparatus of Komatsuzaki is fully capable of being operable at a frequency of up to 100 cycle/min.

With regard to Weber's reference, the crux of Applicants argument is that Weber Weber et al does not teach means for reciprocally moving the wafer holder at a frequency of up to 100 cycle/min. However, Applicants admitted that Weber et disclose the substrate receiving device, which can be moved reciprocally in the vertical direction to lower and lift the wafers into and out the fluid container. Thus, Applicants themselves acknowledge that the structural limitations of the claimed apparatus are met by Weber. The way the apparatus operates, i.e. functional limitations of apparatus do not impart patentability, since the substantially identical apparatus of Weber is fully capable of operating its wafer holder at the claimed frequency (the pertinent case law is discussed above).

With regard to 35 USC 103(a) rejection ***over Komatsuzaki in view of Erk*** Applicants argue that there is no motivation to combine references to Komatsuzaki and Erk because Komatsuzaki, while teaching the up and down motion, does not teach frequency. Erk teaches the cleaning by passing wafers through gas-liquid interface, and as acknowledged by Applicants, Erk also teaches ***reciprocal up and down movement, which is most effective near the gas liquid interface***

(emphasis added - M.K.), and since Erk in Applicants' opinion, teaches half of the wafer immersed, and Komatsuzaki teaches the whole wafer immersed, therefore, there is no motivation to combine these two references.

In response to applicant's argument, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both Erk and Komatsuzaki teach wet chemical treatment of semiconductor substrates and **both teachings comprise the same process enhancement technique**, namely the **reciprocal motion of the substrate positioned in the processing liquid**. Erk states that the reciprocating rate affects semiconductor processing time and that sufficient reciprocating rate leads to accelerated cleaning, therefore exposure to other treatment tools (techniques) can be minimized (col.6, lines 28-37). Erk also discloses the preferable reciprocating rate of **at least 60 cycles/min** (reads on up to a 100 cycles/min) as one of his processing parameters. Therefore, one skilled in the art at the time the invention was made, motivated by the teaching of Erk would have found it obvious to utilize the preferable reciprocating rate of Erk in order to **accelerate treatment** of semiconductor substrate in the teaching of Komatsuzaki with the reasonable expectation of success.

It is also noted that had Erk taught the exact same process as Komatsuzaki does with the claimed frequency of motion, the Erk reference would have been used alone as a 102 reference.

In response to the argument that Erk does not teach a method in which a wafer is **completely** immersed in a stripper solution, Applicants are advised that the features upon which applicant relies (i.e., **completely** immersing) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants' argument with regard to rejection of claims 3 and 4 resides in contention that neither Weber, nor Komatsuzaki teach the limitation of 100 cycles /min for the functional limitation of the claimed apparatus. This issue was fully addressed above in the sections of 35 USC 102 rejections of apparatus claims over Weber and Komatsuzaki, each one individually, and the above rationale is incorporated herein in its entirety. Applicants' admission in the rejection of claims 3 and 4 has been used to remedy the deficiency of a specific design of wafer holders not taught by the primary references. The claimed wafer holders are typical holders, commonly and widely used in the art was admitted by Applicants (paragraph, bridging pages 16 and 16 of the instant disclosure).

Applicants' argument with regard to rejection of claim 7 over Weber in view of Cardani is not persuasive, because this argument is once again based on alleged patentability of the functional limitation of the apparatus i.e. the ability of the wafer holder to move at the frequency of up to 100 cycles/min. It is once again reiterated that while this limitation is pertinent to the method claims, and has been addressed in the rejection of the method claims, the patentability of the functional limitation in the otherwise identical apparatus has been addressed above and is incorporated herein.

The crux of Applicants' argument with regard to rejection of claims 10 and 11 over Komatsuzaki in view of Erk, and in further view of Ward is alleged incompatibility of Komatsuzaki and Erk, because according to Applicants, these two references involve completely different art area of cleaning in both the degree the wafer is exposed to a cleaning solution and in the agitation of the cleaning solution. The additional reference of Ward et al according to Applicants, while disclosing the chemical compositions, does not lend any additional weight in a 103(a) rejection based on the two main references of Komatsuzaki and Erk et al.

This is not found persuasive for at least the following reasons:

- Komatsuzaki discloses all method steps, as claimed in the independent claim 9 and discussed in § 6 of the present communication, Komatsuzaki only differs from the instant claims by not indicating a specific frequency value of up and down motion. In addition to other semiconductor cleaning means and techniques, in order to enhance semiconductor cleaning process Erk **also**

utilizes reciprocal motion of wafers. Erk provides the range of reciprocating rates from 20 cycles/min to 240 cycles/min and states that the reciprocating rate affects the processing time (col.6, lines 28-31). Erk also discloses the preferable reciprocating rate of at least 60 cycles/min as one of his processing parameters. The motivation to combine Komatsuzaki and Erk is clearly presented in § 6 above.

- Applicants have not addressed the issue on how Ward remedies the deficiencies of the combination of primary references.

Applicants arguments with regard to rejections of claims **12,13, 16, 17 and 20 over the combined teachings of Komatsuzaki, Erk et al and further in view of Noguchi** resides in contention that that since the basic cleaning process disclosed in independent method claims 9 and 16 is not rendered obvious by Komatsuzaki and Erk, the Applicants respectfully reference of Noguchi, which does not teach a method step of reciprocally moving wafers up and down at a frequency of up to 100 cycle/min., does not lend any additional weight in a 103(a) rejection. This is absolutely not persuasive, because the reference to Erk does teach the reciprocally moving wafers up and down at a frequency of up to 100 cycle/min, and this reference was used to remedy the deficiency of Komatsuzaki for **METHOD** claims. The reference to Noguchi is in no way applied to address the frequency, but to show how the step of soaking the wafer in a liquid taught by Noguchi can be introduced into the combined process of Komatsuzaki and Erk.

The crux of Applicants arguments with regard to rejections of claims **14, 18 and 19** appears to hinge on the limitation of reciprocal movement of the wafer holder with the frequency of up to 100 cycles/min that allegedly is not met by the combination of Komatsuzaki and Erk. This issue has been addressed numerous times in the present communication, and is incorporated herein in its entirety.

15. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. Kornakov

Michael Kornakov
Examiner
Art Unit 1746

05/13/2004